



U.S. DEPARTMENT OF **ENERGY**

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A HISTORIC COMMITMENT TO RESEARCH AND EDUCATION

WASHINGTON, DC -- In a speech to the National Academy of Sciences, President Obama outlined a bold commitment to basic and applied research, innovation and education. The White House fact sheet is below.

More information about the 46 Energy Frontier Research Centers is available online at: <http://www.sc.doe.gov/bes/EFRC.html>.

The Funding Opportunity Announcement for ARPA-E is attached.

THE WHITE HOUSE

Office of the Press Secretary

FACT SHEET: A HISTORIC COMMITMENT TO RESEARCH AND EDUCATION

Today, President Obama will speak before the Annual Meeting of the National Academy of Sciences, and discuss his plans to reinvigorate the American scientific enterprise through a bold commitment to basic and applied research, innovation, and education.

Given the nature of the challenges the country faces in global economic competitiveness, energy, and health, the President will call for the U.S. to surpass its record investment in research and development, set in 1964 at the height of the space race, exceeding three percent of GDP. This goal would be met with both public and private investment.

President Obama has already made science and technology a top priority: The Recovery Act includes \$21.5 billion for research and development, the largest increase in our Nation's history, and well as major investments in broadband

networks, clean energy technologies, and health information technology. The President's FY10 budget includes sustained increases in basic research, \$75 billion to make the research and experimentation tax credit permanent, and funding to triple the number of the National Science Foundation's graduate research fellowships. The President is committed to restoring integrity to science policy, and making decisions on the basis of evidence, rather than ideology.

To further advance his science and technology agenda, the President will announce:

- A commitment to finish the 10-year doubling of 3 key science agencies (National Science Foundation, DOE Office of Science, and the National Institutes of Standards and Technology). Between 2019 and 2016, the Administration's enacted and proposed budgets would add \$42.6 billion to the 2008 budgets for these basic research agencies, with a special emphasis on encouraging high-risk, high-return research and supporting researchers at the beginning of their careers.
- The launch of the Advanced Research Projects Agency-Energy (ARPA-E). ARPA-E is a new Department of Energy organization modeled after the Defense Advanced Research Projects Agency, the defense agency that gave us the Internet, stealth aircraft, and many other technological breakthroughs.
- A joint initiative by the Department of Energy and the National Science Foundation that will inspire tens of thousands of American students to pursue careers in science, engineering, and entrepreneurship related to clean energy – with programs and scholarships from grade school to graduate school.
- The membership of the President's Council of Advisors on Science and Technology, a council of leading scientists and engineers that will advise the President and the Vice President and help the administration formulate policy in the many areas where understanding of science, technology, and innovation is key to forming responsible and effective policy.

Furthermore, the President will make it a national imperative to dramatically improve student achievement in math and science, and move US students from the middle of the pack to the top on international benchmarks over the next decade by challenging all Americans to dramatically increase support for math and science education.

- The Administration's \$5 billion "Race To The Top" fund will encourage states to improve the quality and supply of math and science teachers, including alternative routes into teaching for math and science teachers and proposals to upgrade teacher training and promote and reward effective teachers. States can also use Recovery Act funds to modernize and renovate new science labs. The Administration is also supporting investments in scholarships to attract and prepare high-quality math and science teachers through the Robert Noyce Scholarship Program and other investments in student aid, a push for rigorous, internationally-benchmarked standards, high-quality curricula aligned to the standards, and better assessments.
- The President will call for an "all hands on deck" approach and specifically challenge Governors, CEOs, philanthropists, educators, parents, scientists and engineers, and, most of all, students to take personal responsibility for meeting the goal. To begin this effort, he will:
 - Announce that Governor Rendell will lead an effort with the National Governors Association (NGA) to increase the number of States that are making STEM (science, technology, engineering and mathematics) a top priority.
 - Challenge pre-eminent scientists and engineers (starting with the more than 2,000 members of the National Academy) to take specific actions that will help achieve his goal, such as mentoring teachers and students in disadvantaged schools, starting a Science Festival in their city, or encouraging their university to create special programs that allow students to get a STEM degree and a teaching certificate at the same time.
- The President will also pledge his personal involvement in a public awareness and outreach campaign using Public Service Announcements, new media, and social networking tools to inspire young people to excel in STEM and pursue careers as scientists, engineers, and innovators.

SPARKING THE CLEAN ENERGY REVOLUTION

- As part of his plan to build a clean energy economy that will reduce our dependence on foreign oil and cut carbon pollution, the President will announce the launch of the \$400 million Advanced Research Projects Agency-Energy (ARPA-E). In addition, the Department of Energy will announce grants to establish 46 Energy Frontier Research Centers.

- ARPA-E is a new Department of Energy organization modeled after the Defense Advanced Research Projects Agency, the defense agency that gave us the Internet, stealth aircraft, and many other technological breakthroughs. The recommendation to create ARPA-E came from a report of the National Academy of Sciences entitled *Rising Above The Gathering Storm*, and funding for ARPA-E was included in the Recovery Act.
- ARPA-E will award grants to recipients that enhance the economic and energy security of the United States through the development of breakthrough energy technologies; reduce the need for consumption of foreign oil; reduce energy-related emissions, including greenhouse gases; improve the energy efficiency of all economic sectors; and ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.
- ARPA-E will issue an initial solicitation that will focus on applicants with a well-formed R&D plan for a transformational concept or new technology that can make a significant contribution towards attainment of the President's Energy Plan. Under this announcement, ARPA-E will fund energy technology projects that (1) translate scientific discoveries and cutting-edge inventions into technological innovations and (2) accelerate transformational technological advances in areas that industry is not likely to undertake independently because of high technical or financial risk.
- The Department of Energy will also be supporting 46 Energy Frontier Research Centers with a total planned commitment of \$777 million. These centers will enlist the talents and skills of the very best American scientists and engineers to address current fundamental scientific roadblocks to clean energy and energy security. Roughly one-third of the centers will be supported by Recovery Act funding.
- These centers, involving almost 1,800 researchers and students from universities, national labs, companies, and non-profits from 36 states and the District of Columbia, will address the full range of energy research challenges in renewable and carbon-neutral energy, energy efficiency, energy storage, and cross-cutting science. Each center will receive \$2-\$5 million per year for an initial period of five years.

- EFRC researchers will be able to take advantage of new capabilities in nanotechnology, light sources that are a million times brighter than the sun, supercomputers, and other advanced instrumentation, much of it developed with support from the Department of Energy's Office of Science.

INSPIRING THE NEXT GENERATION OF CLEAN ENERGY INNOVATORS

- The President will announce a joint initiative by the Department of Energy and the National Science Foundation that will inspire tens of thousands of American students to pursue careers in science, engineering, and entrepreneurship related to clean energy.
- In the 1950s and 1960s, Sputnik and the space race inspired young people to pursue careers in science and engineering. The average age of NASA's Mission Control during the Apollo 17 Mission, for example, was 26. President Obama believes that we have a similar opportunity to inspire today's young people to tackle the single most important challenge of their generation – the need to develop cheap, abundant, clean energy and accelerate the transition to a low carbon economy.
- The President's initiative will empower young men and women to invent and commercialize advanced energy technologies such as efficient and cost effective methods for converting sunlight to electricity and fuel, carbon capture and sequestration, stationary and portable advanced batteries for plug-in electric cars, advanced energy storage concepts that will enable sustained energy supply from solar, wind, and other renewable energy sources, high-efficiency deployment of power across "smart grids," and carbon neutral commercial and residential buildings.
- The initiative – known as RE-ENERGYSE (REgaining our ENERGY Science and Engineering Edge), will be jointly funded by the Department of Energy and the National Science Foundation. RE-ENERGYSE will support, for example:
 - An education and outreach campaign that uses movies, radio, cyber-learning, television, classroom curriculum, social networks, and local science museums to capture the imagination of young people, and teach them about the role that science and technology can play in addressing our energy challenge
 - Energy research opportunities for undergraduates

- Educational opportunities for women and underrepresented minorities who seek careers in the clean energy sector
- Partnerships between industry and two-year and four-year colleges to strengthen education for technicians in the clean energy sector, focusing on curriculum development, teacher training, and career pathways from high schools to community colleges
- Interdisciplinary energy graduate programs at the master's and Ph.D. level that integrate science, engineering, entrepreneurship, and public policy
- Individual fellowships to graduate students and postdoctoral researchers involved in the frontiers of clean energy research

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